Neutron Cross Section Evaluations for ^{70,72,73,74,76}Ge

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Neutron cross section evaluations were performed for all stable and long-lived isotopes of Germanium, ^{70,72,73,74,76}Ge, up to 20 MeV. The work was motivated by the need to fill-in the gap in current evaluations that do not provide photon production data. These data are of importance for Monte Carlo simulation calculations of detector systems, and thus of relevance also to homeland security applications.

Evaluations were done separately in resonance and fast neutron energy regions. Current resonance evaluations were updated as a part of the ongoing BNL-325 re-evaluation effort. At higher energies, EMPIRE model code reaction system was employed. Calculations were validated against experimental data whenever available, including well measured photon production for n + Fe. ENDF-6 formatted files were prepared and submitted for inclusion into a new version of the United States ENDF/B library, ENDF/B-VII.

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